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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/763,403

01/22/2004

Shashikant Prasad

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08/08/2005

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EXAMINER

LEPISTO, RYAN A

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,403

Applicant(s)

PRASAD ET AL.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11, 15 and 19-22 is/are rejected.
7) ☒ Claim(s) 12-14 and 16-18 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

1. The disclosure is objected to because of the following informalities:

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- The title "Need of the Invention" on page 5 should be deleted.
- The title "Objects of the Invention" on page 5 should be combined with the "Nature and Brief Disclosure of the invention" section and be titled – Summary of the Invention –.

Appropriate correction is required.

Claim Objections

2. The claims are objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

3. **Claim 13** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 already claims the relationship $n_2 = n_4$ and therefore claiming it again in claim 13 does not limit the parent claim.

4. **Claims 1-22** are objected to because of the following informalities:

- With regard to claims 1-22: All the claims are missing proper prepositions. For example, claim 1 should start – A dispersion optimized fiber...– and the rest of the claims should start – The dispersion optimized fiber according to claim 1...–.
- With regard to claims 1 and 11: The refractive indices (n_1 , etc) should be defined in the beginning of the claim so that there is basis for these variables in all of the equations. For example, the last paragraph of the claim could be inserted after “a ring core region 3 and an outer glass region 4,” or equation 1 should be moved to coincide with equations 2-4.
- With regard to claim 2: In the first line it should read – cladding region 2 – and the word “said” should be deleted before “outer periphery” to ensure proper antecedent basis.
- With regard to claims 3 and 15: The second line should read – insensitive to micro bend loss and has a dispersion slope of no more than...–.
- With regard to claims 4-5 and 16-17: The statement that something equals about a value is not proper. A variable equals a value or a variable is about a value, it can't be both. If these claims are not amended to fix this issue, it would become a 35 USC 112, second paragraph rejection.
- With regard to claim 6: On line 2 “it” should be replaced with – the fiber – and should further read – comprising a single annular ring...–.
- With regard to claims 3, 7-8, 15 and 19: The period between “nm” and “km” should be deleted.

- With regard to claims 8-10 and 20-22: Limitations in parenthesis should be incorporated in the body of the claim instead of in the parenthesis and properties like polarization mode dispersion should not be capitalized.
- With regard to claim 14: The ring core is stated to be between only the inner cladding and nothing else. The ring core has to be between two layers. It is believed that line 3 of this claim should read "...said inner cladding 2 and said ring core 3...".
- With regard to claims 6 and 18: The word "pure" should be deleted to ensure proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-11, 15 and 19-22** are rejected under 35 U.S.C. 103(a) as being obvious over **Changdar et al (US 6,879,764 B2)** (Changdar).

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed

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but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Changdar teaches a dispersion shifted optical fiber (Fig. 2a) comprising a center core (1), cladding region (2 with 3), a ring core region (4) and an outer glass region (5) and another embodiment (Fig. 3a) is similar properties comprising a center core (1), inner cladding region (2), a ring core region (4), outer cladding (3) and outer glass region (6) having the following relationships: Note that (n_2 and n_3 together corresponds to applicants cladding region labeled n_2 in the disclosure and therefore n_4 in Changdar would correspond to n_3 and n_5 in Changdar to n_4 of applicants disclosure in embodiment 1)

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$$n_1 > n_4 > n_5 > n_2 > n_3$$

$$0.008 > (n_1 - n_5) > 0.0075 \quad n_1 - n_5 = \text{about } 0.007 \quad a_1 = \text{about } 2.8 \mu\text{m}$$

$$0.0015 > (n_4 - n_5) > 0.0012 \quad n_4 - n_5 = \text{about } 0.0014 \quad a_2 = \text{about } 4.3 \mu\text{m}$$

$$-0.001 < (n_2 - n_5) < -0.0006 \quad n_2 - n_5 = \text{about } -0.0005 \quad a_3 = \text{about } 6.3 \mu\text{m}$$

$$-0.0015 < (n_3 - n_5) < -0.0008 \quad n_3 - n_5 = \text{about } -0.0012 \quad a_4 = \text{about } 9.2 \mu\text{m}$$

↳ accompanied FIGS. 2a and 2b is insensitive to microbend loss and dispersion slope no more than 0.05 ps/nm².km.

Attenuation	about ≤ 0.22
Dispersion at 1530 to 1565 nm	about 2.5 to 6.0 ps/nm.km
Dispersion at 1565 to 1625 nm	about 3.9 to 8.6 ps/nm.km
Dispersion slope	about ≤ 0.05 ps/nm ² .km
Polarization Mode Dispersion (PMD)	about ≤ 0.08 ps/km ^{0.5}
Mode Field Diameter (MFD)	about $8.3 \pm 0.6 \mu\text{m}$
Cut off wavelength	about ≤ 1280 nm

↳ Core concentricity	about $\leq 0.6 \mu\text{m}$
Cladding diameter	about 125 ± 1
Microbending	about ≤ 0.05 dB at 1550 nm
Macro bending	about ≤ 0.5 dB at 1550 nm
Proof test	about 100 kpsi

Changdar does not teach expressly an effective area of 70 μm^2 .

Changdar teaches the rest of the claimed limitations of claim 9 and refractive index comparable to applicants.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to conclude that the fiber taught by Changdar would have a effective area approximate to the area taught by applicant.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The motivation for doing so would have been to increase transmission efficiency by having an optimum low dispersion slope in the L and C transmission bands (Changdar, column 2 lines 64-67).

Allowable Subject Matter

6. **Claims 12-14 and 16-18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: These claims would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims because the latter, either alone or in combination, does not disclose nor render obvious a dispersion optimized fiber comprising (in order from center to periphery) a center core, inner cladding, ring core, outer cladding and outer glass region with the following relationships: ($n_1 \dots n_4$ being the refractive indices and $a_1 \dots a_4$ being the radius

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of each layer in order from center to periphery) equations 11-15 in claim 12, equations 16-19 in claim 16, equations 20-23 in claim 17, in combination with the rest of the claimed limitations.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following are pertinent to the state of the art of fibers with similar refractive index profiles as applicants: Reed (US 4,852,968), Antos et al (US 5,361,319), Judy et al (US 5,905,838), Jones et al (US 6,134,367), Ma et al (US 6,212,322 B1), Hirano et al (US 2002/0001444 A1), Kato et al (US 6,400,877 B1), Fleury et al (US 2002/0067903 A1), Montmorillon et al (US 2002/0054743 A1), de Montmorillon et al (US 2002/0076186 A1), Liu (US 6,421,490 B1), Danziger et al (US 6,442,320 B1), Jiang et al (US 6,445,864 B2), Kato et al (US 6,477,306 B2), Saitou et al (US 2002/0164139 A1), Gruner-Nielson et al (US 6,498,887 B1), Knudsen et al (US 2003/0113084 A1), Saitou et al (US 6,587,627 B2), Mukasa (US 2003/0133678 A1), Tsukitani et al (US 2003/0156809 A1), Matsuo et al (US 2003/0169988 A1), Lysiansky et al (US 2003/0185531 A1), Caplen et al (US 6,650,814 B2), Tirloni et al (US 2004/0028359 A1), Rosenblum et al (US 2004/0067034 A1), Kalish et al (US 6,904,217 B2).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

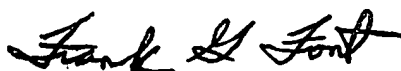
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 7/25/05



Frank Font

Supervisory Patent Examiner

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